APPENDIX A
Pace International, LLC
Wapato, WA, Yakama Reservation
NON - TITLE V Summary of Facility Emission Inventory

Total Potential Emissions

Emission Unit	Emission Unit Description	Annual Emissions (tons per year) CO	Lead	NOx	PM with FARR	PM10 with FARR	SO2 with FARR	VOC	HAPs
WAP - B6	Boiler 600 HP	3.93	9.89E-04	15.71	1.57	1.81	55.75	0.16	0.012
WAP - B7	Boiler 700 HP	4.58	1.2E-03	18.33	1.83	2.11	65.08	0.18	
WAP - Shield Brite VOCs	Storage Tanks, Mixing Tanks, Evaporation/Sediment Ponds							Assumed greater than 100	0.314
WAP - Cascade	Cascades Dry Mix Process Ventilation				59.79	41.85			
Total Potential Emissions		8.51	0.002	34.04	63.19	45.77	**120.84**	**Assumed greater than 100**	**0.326**

Table 1a

Total Potential HAP Emissions

Emission Units WAP-B6 and WAP-B7 Boilers

Compound	Total Annual (tons/yr)
Arsenic	**0.0010**
Beryllium	**0.0007**
Cadmium	**0.0007**
Chromium	**0.0007**
Lead	**0.0021**
Manganese	**0.0014**
Mercury	**0.0007**
Nickel	**0.0007**
Selenium	**0.0036**
Total of all HAPs (tons/year):	**0.012**

Table 1b

Shield Brite Processes

Shield Brite HAP Compound	Total Purchased = Emissions (tons/yr)
Diethanolamine	0.100
Glycol Ether EB	0.210
Glycol Ether 2-Butoxethonal	0.004
Total of all HAPs from Shield Brite Processes (tons/year):	0.314

Total Allowable Emissions Estimates - Requiring the use of a baghouse, and appling voluntary limits on fuel sulfur content and VOC emissions

Emission Unit	Emission Unit Description	Annual Emissions (tons per year) CO	Lead	NOx	PM with baghouse	PM10 with baghouse	SO_2 with fuel sulfur limit	VOC Allowable Limit	HAPs
WAP - B6	Boiler 600 HP	3.93	9.89E-04	15.71	1.57	1.81	5.58	0.16	0.012
WAP - B7	Boiler 700 HP	4.58	1.2E-03	18.33	1.83	2.11	6.51	0.18	
WAP - Shield Brite VOCs	Storage Tanks, Mixing Tanks, Evaporation/Sediment Ponds							79.00	0.314
WAP - Cascade	Cascades Dry Mix Process Ventilation				11.96	8.37			
Total Allowable Emissions		8.51	0.002	34.04	15.36	12.29	12.08	79.34	0.326

Table 1c

Total Anticipated Actual Emissions Estimates

Emission Unit	Emission Unit Description	Annual Emissions (tons per year) CO	Lead	NOx	PM with baghouse	PM10 with baghouse	SO_2 with fuel sulfur limit	VOC Actual Emissions Estimate	HAPs
WAP - B6	Boiler 600 HP	3.93	9.89E-04	15.71	1.57	1.81	5.58	0.16	0.012
WAP - B7	Boiler 700 HP	4.58	1.2E-03	18.33	1.83	2.11	6.51	0.18	
WAP - Shield Brite VOCs	Storage Tanks, Mixing Tanks, Evaporation/Sediment Ponds							68.80	0.314
WAP - Cascade	Cascades Dry Mix Process Ventilation				11.96	8.37			
Total Actual Emissions		8.51	0.002	34.04	15.36	12.29	12.08	69.14	0.326

Table 1d

Pace International, LLC
Wapato, WA, Yakama Reservation
Emission Inventory Details - Boilers

Emission Unit: **WAP-B6 Oil-Fired Boiler** Manufacturer: Ray Burner Model: # 600

Activity: **Diesel #2 Oil-Fired Boiler** Date Manufactured: 1969 Serial: #NB27104

Maximum Rating	Annual Operating Hours	Emission Factors, lb/10^3 gal							Annual Emissions (tons per year)						
		CO	Lead	NOx	PM	PM10	SO2	VOC	CO	Lead	NOx	PM	PM10	SO2	VOC
25.1 MMBtu/hr	8760	5	0.00126	20	2	2.3	71	0.20	3.93	9.9E-04	15.71	1.57	1.81	55.75	0.16

Table 2a

Basis for rating: 600 HP **[(600 hp)*(33475 Btu/boiler hp)*(1/0.8)] / 10^6 = 25.1 MMBtu/hr**

Assumed efficiency = 0.8

Emission Unit: **WAP-B7 Oil-Fired Boiler** Manufacturer: Continental Model: #B700DW

Activity: **Diesel #2 Oil-Fired Boiler** Date Manufactured: 1976 Serial: #753726436A

Maximum Rating	Annual Operating Hours	Emission Factors, lb/10^3 gal							Annual Emissions (tons per year)						
		CO	Lead	NOx	PM	PM10	SO2	VOC	CO	Lead	NOx	PM	PM10	SO2	VOC
29.3 MMBtu/hr	8760	5	0.00126	20	2	2.3	71	0.20	4.58	1.2E-03	18.33	1.83	2.11	65.08	0.18

Table 2b

Basis for rating: 700 HP **[(700 hp)*(33475 Btu/boiler hp)*(1/0.8)] / 10^6 = 29.3 MMBtu/hr**

Assumed efficiency = 0.8

CO factor: AP-42 September 1998, Table 1.3-1, Boiler < 100MMBtu/hr, Distillate oil

Lead factor: AP-42 September 1998, Table 1.3-10, #2 fuel oil (9 lb/10^{12} Btu) (9 lb/10^{12} Btu) * (140 MMBtu/10^3 gal) = 0.00126 lb/10^3 gal

NOx factor: AP-42 September 1998, Table 1.3-1, Boiler < 100MMBtu/hr, Distillate oil

PM factor: AP-42 September 1998, Table 1.3-1, Boiler < 100MMBtu/hr, Distillate oil (filterable)

PM10 factor AP-42 September 1998, Table 1.3-2, Distillate oil (1.3 lb/10^3 gal Condensable) + Table 1.3-6, Distillate oil (1.0 lb/10^3 gal PM10 Filterable)

SO2 factor: AP-42 September 1998, Table 1.3-1, Boiler < 100MMBtu/hr, Distillate oil (142*S lb/10^3 gal)

S = 0.5 Maximum sulfur content allowed by FARR Limit (40 CFR 49.130)

VOC factor: AP-42 September 1998, Table 1.3-3, Industrial boiler, Distillate oil, NMTOC

Emission factors converted from lb/1000 gal to lb/MMBtu based on heat content of fuel: 140 MMBtu/10^3 gal

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Allowable Emissions with limit on sulfur content of the fuel to S = 0.05 % sulfur by weight:

SO2 factor: AP-42 September 1998, Table 1.3-1, Boiler < S = 0.05 Limit requested on sulfur content

Emission Unit: **WAP-B6 Oil-Fired Boiler**

Activity: **Low Sulfur Diesel #2 Oil-Fired Boiler**

Maximum Rating	Annual Operating Hours	Emission Factors, lb/10^3 gal							Annual Emissions (tons per year)						
		CO	Lead	NOx	PM	PM10	SO2	VOC	CO	Lead	NOx	PM	PM10	SO2	VOC
25.1 MMBtu/hr	8760	5	0.00126	20	2	2.3	7.1	0.20	3.93	9.9E-04	15.71	1.57	1.81	5.58	0.16

Table 2c

Emission Unit: **WAP-B7 Oil-Fired Boiler**

Activity: **Low Sulfur Diesel #2 Oil-Fired Boiler**

Maximum Rating	Annual Operating Hours	Emission Factors, lb/10^3 gal							Annual Emissions (tons per year)						
		CO	Lead	NOx	PM	PM10	SO2	VOC	CO	Lead	NOx	PM	PM10	SO2	VOC
29.3 MMBtu/hr	8760	5	0.00126	20	2	2.3	7.1	0.20	4.58	1.2E-03	18.33	1.83	2.11	6.51	0.18

Table 2d

Pace International, LLC
Wapato, WA, Yakama Reservation
Emission Inventory Details - Shield Brite VOCs

Emission Unit: **WAP-3s Storage Tanks**
Activity: **Storage of materials for the Shield Brite manufacturing process**

Emission Unit: **WAP-3s Mixing Tanks For Shield Brite Product**
Activity: **Process involves mixing heated water with shellac and miscellaneous non-HAP ingredients, which vary by**

Emission Unit: **WAP-2 Evaporation Ponds**
Activity: **Residue and cleanup losses from Shield Brite manufacturing process**

It is difficult to estimate the PTE emissions from the Pace facilities therefore Pace has chosen to assume that the PTE is greater than 100 TPY.

Pace will limit their total VOC emissions from the Shield Brite processes to 79 TPY.

VOC emissions shall be calculated monthly using Equation 1 below for all VOC-containing materials, where: the "Mass Balance Measured VOC Losses" is a mass balance (in tons) performed using Equation 2 below which is described it more detail in the Technical Support Document Section 4.2.2. The "Excluded VOC Purchased" includes (in tons) all organic compounds purchased during the month that are not included in the Mass Balance Measured VOC Losses.

Equation 1: Monthly VOC emissions = [(Mass Balance Measured VOC Losses) + (Excluded VOC Purchased) x 0.26]

Equation 2: Mass Balance Measured VOC Losses = (Total Starting VOC Inventory + Total VOC Purchased) - (Total VOC Sold + Total Ending VOC Inventory)

The following formula was used to calculate the VOC content of each product. The amount of VOC contributed by each of the 4 VOC materials of concern, for each product, and all of the intermediary blends, were summed to obtain the total lbs of VOC for each product. Pace will maintain those calculations on file.

Amount Product "A" (gal)	*	Fraction of one of the 4 VOC materials in Product "A"	*	Specific gravity (density of material relative to the density of water)	*	Density of water (8.345 lb/gal)	=	Amount VOC in Product "A" (lbs)

	(tons)
Total Purchased Amount of Materials Excluded From Mass Balance 2005	152.74
26% of Total Purchased Excluded Materials = Estimated Emissions From Excluded Materials	39.71
Total Estimated VOC Emissions from Mass Balance	29.09
Total VOC emissions 2005	68.80

Table 3a

Projected growth	Curently using about 70% of Shield Brite capacity
Projected emissions if growth to capacity	**98.29 TPY**

Pace International, LLC
Wapato, WA, Yakama Reservation
Emission Inventory Details - Shield Brite VOCs

Mass Balance Measured VOC Losses = (Total Starting VOC Inventory + Total VOC Purchased) - (Total VOC Sold + Total Ending VOC Inventory)

2005 VOC EMISSION MATERIAL BALANCE	IPA (lbs)	MORPH (lbs)	E. ALC (lbs)	VERSENE 100 (lbs)	Polysorbate 80 (lbs)	total (lbs)	total (ton)
START VOC INVENTORY	48450	27452	2580	55203	61771	195456	97.73
TOTAL PURCHASED VOC RAW MATL	262924	245136	1121	95017	182390	786588	393.29
TOTAL VOC SOLD 2005	204353	191003	1145	97765	189763	684029	342.01
END VOC INVENTORY	88874	63118	1699	45954	40201	239846	119.92
Amount Unacounted For = Emissions (lbs)	18148	18467	857	6501	14197	58170	
Amount Unacounted For = Emissions (tons)	9	9	0	3.25	7.0985		29.09

Table 4a

	IPA (lbs)	MORPH (lbs)	E. ALC (lbs)	VERSENE 100 (lbs)	Polysorbate 80 (lbs)
% of Purchased That is Unacounted For	6.90%	7.53%	76.49%	6.84%	7.78%

Ave % loss without outlier	Ave % loss	Ave % loss X 1.25
7.27%	21.11%	26.39%

All Pace VOC Materials Excluded From Mass Balance	
Chemical	**Total Purchased 2005 (lbs)**
Butanol	370
Herbalox	0
Methyl Cottonseed (T-41)	133460
Methyl Salicylate	0
Pluronic L-62	1844
Propionic Acid	0
Span 20	2740
Span 80	1884
Surfynol TGE	3035
Tergitol NP 12	7704
Triton BG-10	5750
Tween 60	2820
Calfax DB 45	0
Sorbitol 70% soln.	40
Methoxypropanamine	395
Butyl Acetate	0
Silicone DC 200 Food Grade	11
Glycerine	0
Tween 21	0
Glycol Ether	415
Imazalil 500 EC (fungaflor)	12157
Dipropylene Glycol	2100
Propylene Glycol USP	51408
IGEPAL Co-430	587
IGEPAL 9N6 CO 530	257
IGEPAL 9N9 CO 630	3515
IGEPAL 9N8 CO-610	10230
Mazclean	2700
Tergitol 15S9	450
Tergitol NP 6	0
Triethanolamine 85%	0
Triton X-114	1410
Peg 400	1545
Clove Leaf Oil	49827
Dowicide	8817
Total (lbs)	305471
Total (tons)	152.7355

Table 4b

Pace International, LLC
Wapato, WA, Yakama Reservation
Emission Inventory Details - Cascade Facility

Emission Unit: **WAP-4 Cascades Facility Dry Mix Unit and Material Handling**
Activity: **Dry ingredients are mixed to form slug and snail bait**
Ingredients: **Flour, animal fat, metaldehyde, DB-27**

Potential Emissions Estimate using FARR Limit:

Annual Controlled Emissions (tons per year)						
CO	**Lead**	**NOx**	**PM**	**PM10**	**SO2**	**VOC**
			59.79	41.85		

Table 5a

Fan airflow 15924 ACFM assume ACFM near standard temp, moisture, and pressure so ACFM = dscf

Fan Horsepower 40 hp
Fan Efficiency 0.5
Headspace pressure 8 " water
1 pound = 7000 grains

Farr Limit 0.1 gr/dscf (see 40 CFR Part 49.125(d)(3))

PM Factor from FARR 13.65 lbs/hr

Equation for calculation of PM factor using FARR limit:
0.1 gr/dscf * 15924 dscf/min * 60 min/hr * 1 lb/7000gr = 13.65 lb/hr

Cumulative Wt % of PM10 0.7

(Conservative estimate based on AP42 Appendix B.1 section 9.9.1 Particle size distribution data for Feed and Grain Mills and Elevators)

Actual emissions estimate when controled by baghouse

Annual Controlled Emissions (tons per year)						
CO	**Lead**	**NOx**	**PM**	**PM10**	**SO2**	**VOC**
			11.96	8.37		

Table 5b

Estimated emissions when controlled by a baghous 0.02 gr/dscf Basis: Estimate from application

PM Factor from baghouse 2.73 lbs/hr

Equation for calculation of PM factor using Pace baghouse emission estimate:
0.02 gr/dscf * 15924 dscf/min * 60 min/hr * 1 lb/7000gr = 2.73 lb/hr

Pace International, LLC
Wapato, WA, Yakama Reservation
Emission Inventory Details - HAPs

Emission Units: **WAP-B6, Oil-fired Boiler**
WAP-B7, Oil-fired Boiler

Production Information

Potential Hours of Operation	8,760	hours/yr
Maximum Heat Input WAP-B6	25.10	MMBtu/hr
Maximum Heat Input WAP-B7	29.30	MMBtu/hr
Maximum Combined Heat Input	54.4	MMBtu/hr
Maximum Annual Heat Input @ 8760 hr/yr	476,544	MMBtu/yr

Boiler Combustion HAP Compound	Emission Factor[1] (lb/10^{12} BTU)	Emission Factor Rating	Total Annual (lb/yr)	Total Annual (tons/yr)
Arsenic	4.00	E	1.906	**9.53E-04**
Beryllium	3.00	E	1.430	**7.15E-04**
Cadmium	3.00	E	1.430	**7.15E-04**
Chromium	3.00	E	1.430	**7.15E-04**
Lead	9.00	E	4.289	**2.14E-03**
Manganese	6.00	E	2.859	**1.43E-03**
Mercury	3.00	E	1.430	**7.15E-04**
Nickel	3.00	E	1.430	**7.15E-04**
Selenium	15.00	E	7.148	**3.57E-03**
Total of all HAPs based on combined heat input (tons/year):				**0.012**

Table 6a

[1] AP-42 September 1998, Table 1.3-10

Emission Units: **Shield Bright Process**

HAPs can not be emited in amount greater than purchased. A concervative estimate is that all the HAPs purchased are emitted except Hydrocloric Acid which is not procesed but just purchased, relabeled, and sold

Shield Brite HAP Compound	Total Purchased = Emissions (tons/yr)
Diethanolamine	0.100
Glycol Ether EB	0.210
Glycol Ether 2-Butoxethonal	0.004
Total of all HAPs based from Shield Brite Processes (tons/year):	0.314

Table 6b